

## WHAT IS CLAIMED IS:

1. A method for improving uniformity of a film in a plasma enhanced chemical vapor deposition system in a deposition chamber, said method comprising, before a deposition procedure, steps of:

performing a cleaning procedure to remove particles adhered onto an internal wall of said deposition chamber;

performing a pre-deposition procedure to isolate contaminants generated during said cleaning procedure; and

introducing a specified gas into said deposition chamber so as to stabilize a condition inside said deposition chamber.

2. The method according to claim 1 wherein said contaminants include fluoride.

3. The method according to claim 1 wherein said specified gas comprises at least a nitrogen gas.

4. The method according to claim 1 wherein said specified gas comprises at least an argon gas.

5. The method according to claim 1 wherein said specified gas comprises at least a hydrogen gas.

6. The method according to claim 1 wherein said condition to be stabilized is the temperature distribution condition in said deposition chamber.

7. The method according to claim 1 wherein said condition to be stabilized is the contaminant concentration in said deposition chamber.

8. The method according to claim 1 wherein said cleaning procedure is performed by introducing a nitrogen fluoride gas into said deposition chamber.

9. The method according to claim 1 wherein said pre-deposition procedure is performed by introducing a reaction gas without placing any substrate into said deposition chamber.

10. The method according to claim 1 further comprising a step of idling said deposition chamber for a specified period of time for stabilizing temperature distribution in said deposition chamber.

11. A method for improving uniformity of a film in a plasma enhanced chemical vapor deposition system in a deposition chamber, said method comprising, before a deposition procedure, steps of:

performing a cleaning procedure to remove particles adhered onto an internal wall of said deposition chamber;

performing a pre-deposition procedure to isolate contaminants generated during said cleaning procedure; and

idling said deposition chamber for a specified period of time so as to stabilize a condition inside said deposition chamber.

12. The method according to claim 11 wherein said condition to be stabilized is the temperature distribution condition of said deposition chamber.

13. The method according to claim 11 further comprising a step of introducing a specified gas into said deposition chamber so as to dilute said contaminants inside said deposition chamber.

14. The method according to claim 11 wherein said cleaning procedure is performed by introducing a nitrogen fluoride gas into said deposition chamber.

15. The method according to claim 11 wherein said pre-deposition procedure is performed by introducing a reaction gas without placing any substrate into said deposition chamber.

16. The method according to claim 11 wherein said specified period of time is ranged from 1 minute to 20 minutes.

17. A method for improving uniformity of a film in a plasma enhanced chemical vapor deposition system in a deposition chamber, said method

comprising, before a deposition procedure, steps of:

performing a cleaning procedure to remove particles adhered onto an internal wall of said deposition chamber;

performing a pre-deposition procedure to isolate contaminants generated during said cleaning procedure; and

diluting contaminants in said deposition chamber so as to stabilize a condition inside said deposition chamber.

18. The method according to claim 17 wherein said contaminants are diluted with an introduced gas.

19. The method according to claim 17 wherein said introduced gas includes at least a gas selected from a group consisting of nitrogen, argon, hydrogen and a combination thereof.

20. The method according to claim 17 further comprising a step of idling said deposition chamber for a specified period of time for stabilizing a temperature distribution of said deposition chamber.

21. The method according to claim 20 wherein said specified period of time is ranged from 1 minute to 20 minutes.